within the deep flow recharge zones. These are the portions of the deep flo zones in which the land is relatively open and preventive planning will ha^ the greatest impact.

Another critical water protection area, the Pine Barrens area of Loi Island, has been designated by special county legislation. This 100,000-ac area, slated for preservation of both water quality and a unique ecosyster was delineated on the basis of vegetation. It roughly coincides with the de(flow recharge zones.

The Suffolk County Department of Health Services has defined add tional Water Supply Sensitive Areas including zones around public supp wells screened in the upper glacial aquifer. These zones are based on tl water budget area for the supply well and extend 1500 feet upgradient ar 500 feet downgradient of the well. They also include areas where the upp< aquifer is underlain by salt water. These areas are mapped by the Suffa County Health Department.

Wellfield Areas of Contribution—Cape Cod, Massachusetts The Caj Cod Planning and Economic Development Commission (CCPEDC) h; worked with the 11 local communities on Cape Cod that have public watc systems to delineate zones of contribution for their wellfields. In the Cap Cod case, vertical flow is not as important an issue as it is on Long Islanc USGS studies and modeling efforts have established that although the gh cial aquifer is up to 350 feet thick, the predominant flow is through tl upper 100 feet, which is the zone tapped by public water supply well Assuming a relatively uniform flow system, the planning agency has use basic hydrogeologic principles for calculating pumping drawdowns to de lineate Zones of Contribution (ZOC) around wellfields. The boundarit based on estimated hydrogeologic parameters are admittedly approximal but have been accepted by communities as the basis for zoning ordinance: As with any planning program, the boundaries are periodically updated i new data become available.

Wellfield Protection Ordinance: Dade County, Florida A unique aj proach to critical area delineation has been developed by the Metropolita Dade County Department of Environmental Resources Management an the Dade County Planning Department. Funded through a Section 20 planning grant to the three counties dependent on the Biscayne aquifer fc water supply, the project involved the use of a mathematical ground wat€ flow model as a tool for predicting the recharge area of influence for ind: vidual wellfields. The model was also used to provide information o ground water travel time to the wells under pumping conditions.

The Florida Biscayne aquifer, underlying the greater part of Dade, Pair